Extra Credit 2

CMSY-199, Fall 2010

50 points

The source code for this assignment must be submitted electronically using the CE6 course website prior to the start of class on Monday, November 29.

1. Start with the `Calculator` application developed in Homework 5 and implement an `ActionListener` interface from the `java.awt.event` package.
2. The `ActionListener` interface requires that you implement a method called `actionPerformed` which takes an argument of type `ActionEvent` and has a return type of void. Write the `actionPerformed` method similar to the code below where a particular method is called depending upon the source of the `ActionEvent`.
3. Add an `ActionListener` to each button as it is created in the `makeButton` method.
4. Add five new member variables to the `Calculator` class:
   (a) Two doubles to represent the left and right operands
   (b) A String to represent the operator
   (c) A boolean to indicate that the left operand has been input and the display must be cleared when input of the right operand begins
   (d) A double for the value which has been stored in memory
5. Write the event-handling methods to take the appropriate action based on the source of the event and the state of the calculator at the time of the event.
6. The starting state of the calculator and the state after pressing the clear button should be as follows:
   (a) The display shows 0
   (b) The value of the left and right operands are 0
   (c) The operator is set to the empty string
   (d) The starting value in memory is 0 and not cleared when the clear button is pressed

```
public void actionPerformed(ActionEvent e)
{
   JButton source = (JButton) e.getSource();
   if (source == clear)
   {
      clearCalculator();
   }
   else if(source == store)
   {
     storeValue();
   }
   else if(source == recall)
   {
      recallValue();
   }
   else if(source == plus  || source == minus ||
           source == times || source == dividedBy)
   {
      setOperation(source);
   }
   else if (source == equals)
   {
      evaluateExpression();
   }
   else if (source == plusMinus)
   {
      togglePlusMinus();
   }
   else if (source == point)
   {
      addDecimalPoint();
   }
   else // has to be a number
   {
      addDigit(source);
   }
}
```